



# State of Utah

DEPARTMENT OF NATURAL RESOURCES  
DIVISION OF OIL, GAS AND MINING

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June 10, 1999

TO: File

THRU: Joe Helfrich, Permit Supervisor *JH*

FROM: Sharon Falvey, Senior Reclamation Specialist *SKF*

RE: Barn Canyon Ventilation Facility, Permit Amendment, Cyprus Plateau Mining Corporation, Willow Creek Mine, ACT/007/038-98B#2, Folder #2, Carbon County, Utah

## **SYNOPSIS:**

Cyprus Plateau Mining Corporation (CPMC) has submitted an amendment for the Barn Canyon Escape Hoist/Vertical Ventilation Shaft. The ventilation facility will increase the disturbed area by 2.34 acres. This review is focused on hydrologic information mostly presented in Exhibit 22.

## **TECHNICAL ANALYSIS:**

### **ENVIRONMENTAL RESOURCE INFORMATION**

#### **Clear and Accurate**

Page 3.7-96 does not fit directly into the text in the existing plan. A portion of the existing page, including section heading 3.7.9, is not found in the page(s) submitted for the amendment. The applicant will be required to submit a complete copy removing the redline strike-out and should correct any deficiencies related to inserting the amendment into the existing plan at that time.

#### **Findings:**

This amendment does not meet the minimum requirements of this section. The amendment must include the following:

- R645-301-120.** Submit a complete amendment in a format that: 1) removes the redline strike-out, 2) can be directly inserted into the existing plan, 3) includes the missing text from page 3.7-96, and 4) corrects any pages which do not coalesce with the existing plan.

## **HYDROLOGIC RESOURCE INFORMATION**

Regulatory Reference: 30 CFR Sec. 701.5, 784.14; R645-100-200, -301-720.

### **Analysis:**

#### **Surface-water information.**

The Barn Canyon contains an ephemeral drainage. This drainage is considered intermittent by regulatory definition because it is greater than 1 square mile.

#### **Probable hydrologic consequences determination.**

The Barn Canyon ventilation shaft will be sealed with a five foot re-enforced upward expanding concrete plug on top of the bulkhead, and will be buried by four feet of soil that is re-enforced with rock around it's base. It is expected that this seal will result in minimizing potential impacts to the hydrologic balance by preventing runoff from entering the underground entry. The the ventilation portal locations relationship to the postmining drainage and road are shown on Map 32A.

Construction at the Barn Canyon ventilation shaft is not expected to intercept ground water at a rate that would require discharge from the underground workings. Ground water that is encountered in the mine near Willow Creek has characteristics that do not meet UPDES discharge requirements. If intercepted groundwater needs to be discharged, the plan commits to convey the ground water to the raw water pond and retain it in a closed loop system. Encountered ground water will be analyzed according to the ground water baseline parameters outlined in the plan, and the permittee will obtain Division approval prior to discharge or use (pg 4.7-10). The amendment also provides commitments to wash down the cement trucks into the raw water pond to reduce potential for impacts to the Price River downstream from the construction site.

### **Findings:**

This amendment meets the minimum requirements for this section.

## **OPERATIONAL HYDROLOGIC INFORMATION**

Regulatory Reference: 30 CFR Sec. 773.17, 774.13, 784.14, 784.16, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-300-140, -300-141, -300-142, -300-143, -300-144, -300-145, -300-146, -300-147, -300-147, -300-148, -301-512, -301-514, -301-521, -301-531, -301-532, -301-533, -301-536, -301-542, -301-720, -301-731, -301-732, -301-733, -301-742, -301-743, -301-750, -301-761, -301-764.

### **Analysis:**

#### **Discharges into an underground mine.**

No discharge into an underground mine is applied for or granted with this amendment.

### **Diversions.**

Diversions around the fan portal were designed to convey runoff from a 10-year, 6-hour precipitation event and are routed along the pad perimeter. Ditch UD-24 is not shown to drain to any existing drainage features but, will join road ditch DD-31. The last five feet of this ditch are to be flattened and expanded to convey runoff across the road.

Drainage associated with the ventilation shaft access road are presented on Maps 31A, 31B, and 33. The existing road lies in the canyon drainage at some locations. The existing road shows no signs of instability or excessive erosion. (This was verified on May 13, 1998: See the DOGM field visit form). The road is intended to be retained for site access with alterations to improve the existing road. Alterations include; two passing areas, two swales, two culverts and two adjacent road ditches DD-31 and DD-32. The plan shows an existing road configuration, in section DD-31b, where the road is not adequately sloped to promote runoff to flow along the roadside. **The applicant should provide proof of the effort in cutting this section to the design presented in DD-31a as is recommended by the consultant. It is recognized the road substrate is composed of rock and cobbles and re-grading may not be feasible in this section without blasting. However, attempts should be made to re-grade this section.**

### **Stream buffer zones.**

The ventilation pad is within an ephemeral drainage and an existing road will be utilized for access and maintenance issues. Stream buffer zone regulations apply to this site because the site drains a watershed area greater than one square mile. The existing road is aligned in the drainage through the canyon. The minimum design requirements for the 10 year- 6 hour event on the road is considered adequate based on the following:

- The proposed road is to be used for maintenance access only after construction is completed.
- The proposed design will promote runoff to flow into existing stream channels rather than the current conditions which convey flow along portions of the road by-passing the natural channel.

The Division is granting an exemption to R645-742.412 because the applicant has committed to the following at the request of the Division and in accordance with R645-301-730:

- Clean gravel will be used, particles smaller than + 8 mesh (2.38 m.m.) will be removed.
- Truck wash down from cement mixing associated with the site construction will be drained into the thickener pond.
- Gravel use will be minimized and applied only in the areas designated. Swale construction will avoid placing gravel in the flow path from the existing natural channel (Development will begin downstream from the natural channel to minimize contributing sediment to the channel).

### **Sediment control measures.**

The applicant has updated the plan for ASCM(Alternate Sediment Control Measures) that are not associated with the Barn Canyon Fan Amendment. The information relative to the West Portal Long Tunnel, AMR reclamation area, Methane Pump Station will be reviewed in association with the "As-Built" submittal. At this time, no specific approval is granted for the ASCM applied in the areas associated with the "As-Built" amendment.

The sediment control plan is presented for the Barn Canyon Fan Pad Site Plan (Map 31A) and, design calculations are provided in Exhibit 22. Alternate Sediment Control Measures are used to minimize the sediment contributions from the Barn Canyon ventilation site. The pad is treated by surfacing the disturbed area with two inches of washed gravel and placing a boulder re-enforced toe along the cut slope. Washed gravel, eliminating particle sizes less than 8 mesh, is used to minimize the potential for additional sediment contributions. Where swales are constructed, gravel will be placed downstream from the natural drainage to minimize sediment contributions and will be applied only in designated areas.

The proposed method for sediment control is considered acceptable based on the specific information supplied for the ASC measures, design and maintenance including; 1) estimated roughened pocket area and volume, 2) monitoring for visual movement of gravel and sediment from the site and clean up if movement is excessive, 3) replacing gravel on the pad if gravel is displaced from the site, 4) a commitment to provide additional measures should sediment from the site become excessive.

The submitted information includes an estimate for sediment yield and compares undisturbed, operational and post-reclamation site conditions. The estimate provided shows the reclamation configuration to be less erosive than the natural conditions. The division disagrees with some assumptions used to arrive at these numbers. The K factor, after manipulation for the reclaimed section, is not expected to be less erosive than the factor for undisturbed soils. The mulching practice, was accounted for as soil organic matter to adjust the K factor: this adjustment is inappropriate. According to Renard, K.G, et al, 1997 **"short term effects such as from protective cover of mulch or from the mechanical constraints such as disturbance of surface and sub- surface residues are related to the C factor whereas long-term effects such as soil changes or soil structural alterations by organic compounds should be considered part of the K factor"**. The method incorporating straw into the soil should be determined under C factors. However, the RUSLE and USLE measures are primarily designed from data from farming techniques and little information is currently available for reclamation techniques. Some applications for C factors may be applicable to reclaimed areas.

Measures to be employed include gouging ,and mulch application including incorporating 2 tons/acre mulch into the soil, and then adding 1.5 - 2 tons per acre that is either crimped or tackified to the soil surface. Still, the proposed method for sediment control is considered acceptable because the area is relatively small, and the determination for success in the practices conducted at the site will be determined from ongoing site inspection.

Topsoil will be transported to the Gravel Canyon topsoil stockpile. Sediment control measures for the topsoil storage area include surrounding the storage site with a berm, roughening the surface and establishing vegetation.

#### **Exemptions for siltation structures.**

No exemption from siltation structures was requested or granted associated with the Barn Canyon ventilation portal amendment.

#### **Findings:**

This amendment meets minimum requirements under this section.

## RECLAMATION PLAN

### RECLAMATION HYDROLOGY

Regulatory Reference: 30 CFR Sec. 784.14, 784.29, 817.41, 817.42, 817.43, 817.45, 817.49, 817.56, 817.57; R645-301-512, -301-513, -301-514, -301-515, -301-532, -301-533, -301-542, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-733, -301-742, -301-743, -301-750, -301-751, -301-760, -301-761.

#### Analyses:

##### Diversions.

The CPMC has committed to establish a post mining configuration compatible with the natural drainage pattern of the surrounding terrain. The reclamation plan indicates the culverts will be removed and the road, road ditches, and swales will be retained. Presently, no statement from the land owner is provided to acknowledge retaining the road as a post mining land use.

##### Sediment control measures.

The reclamation sediment control measures to be applied at this site are roughening and mulching. Specific applications are discussed in the **Operational Hydrologic Information** presented previously.

#### Findings:

This amendment meets the requirements for diversions and sediment control measures under this section.

#### RECOMMENDATION:

It is recommended that this amendment be approved following incorporation of the amendment in a format that: 1) removes the redline strike-out, 2) can be directly inserted into the existing plan, 3) includes the missing text from page 3.7-96, and 4) corrects any pages which do not coalesce with the existing plan.

#### References:

Renard, K.G., G.R. Foster, G.A. Weesies, D.K. McCool, and D.C. Yoder, coordinators. 1997. Predicting Soil Erosion by Water: A Guide to Conservation Planning With the Revised Universal Soil Loss Equation (RUSLE). U.S. Department of Agriculture, Agriculture Handbook No. 703, 404 pp.